Grassland Fungi Survey Report

Banks Wood

Summerbridge, Nidderdale

Survey carried out by Steve Hindle

Report December 2025

Summary

A large site with two field complexes. The upper part is an extensive area of open grazing which has extensive areas of gorse, some wooded parts, some species rich wet areas and low nutrient grassland. There are two meadows above this area. The lower section has two improved meadows and more pasture. The site was visited on two occasions but each field was only surveyed once. Across the site a total of 45 CHEGD species was recorded including 11 species designated as Vulnerable by the International Union for Conservation of Nature (IUCN). The site is internationally important for Waxcaps and meets a criterion for designation as a Site of Special Scientific Interest (SSSI).
One Priority Species was recorded.

Introduction

This survey was undertaken as part of the NEYEDC Waxcap Project. The project aims to identify and support the protection of ancient grassland based on fungal populations. The UK is known to be globally important for a community of fungi referred to as CHEGD species. The distribution of these fungi across Yorkshire is still unclear but ongoing survey work is building up a picture of regionally, nationally and internationally important sites. CHEGD is an acronym used to describe several groups of grassland fungi restricted to semi-natural, mycologically rich unimproved/ancient grasslands, a habitat seriously threatened throughout the UK and Europe.

Each letter stands for a group of related fungi as follows.

C is for the Clavariaceae or Fairy Clubs, Spindles, and Corals
H is for the Hygrocybe or Waxcaps
E is for the Entoloma or Pinkgills
G is for the Geoglossaceae or Earthtongues
D is for the Dermoloma or Crazed Caps and includes a few other species

Of the five groups the most well-known and best recorded are the colourful waxcaps. For this reason, good sites have come to be known as Waxcap Grasslands.
Waxcaps grasslands are often botanically mundane due to persistent grazing but are ancient grassland which is an irreplaceable habitat. The diversity and interconnectedness of the species present has developed over centuries and once lost will take hundreds of years to rebuild.

The fungi, as indicators of habitat, tell us about the importance of the associated communities within the soil. The fungi themselves play an important part in carbon capture and the soil on these sites has a high carbon content. Being highly active the soil tends to hold, store and filter water effectively.

Methodology

The survey involves walking the entire site and recording all species of CHEGD fungi seen. Fruitbodies are recorded using GPS and maps show the data collected. Common species are usually recorded once per compartment while rare and threatened species are recorded consistently. The maps do not show every fruitbody but give a good impression of the diversity and range.

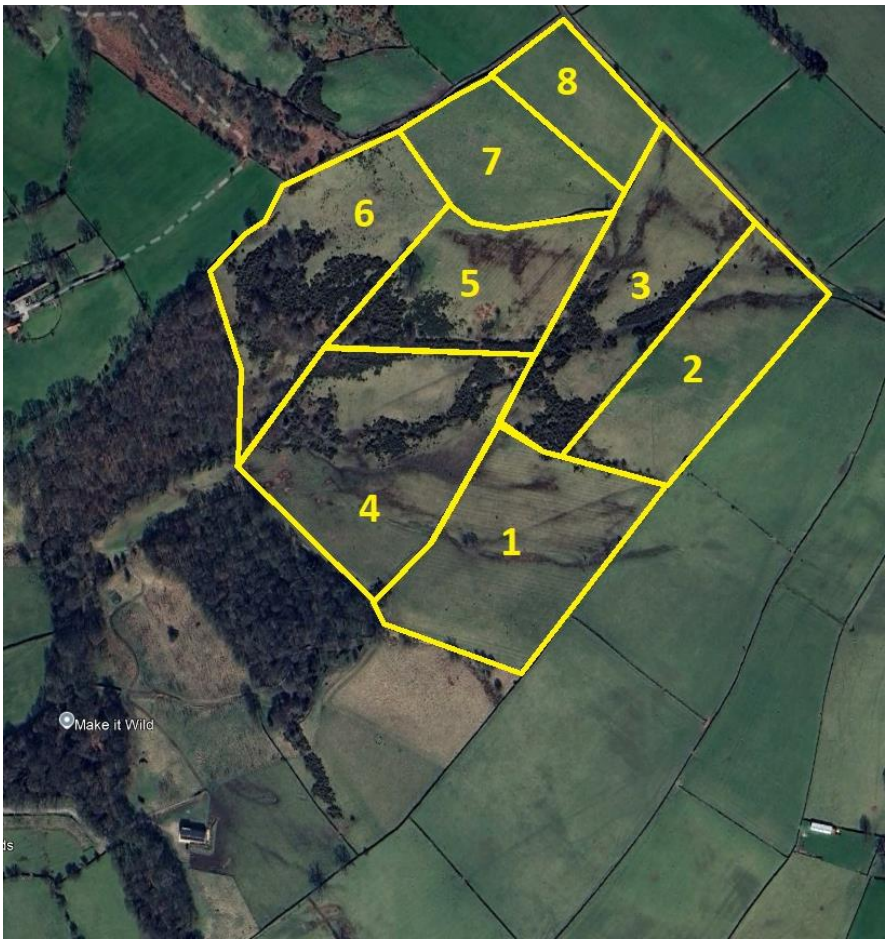
Constraints

A single fungi survey can only give a snapshot of the fungal community present. The fruiting season can start as early as July and runs through to December with the peak in late October to November. The different groups fruit at different times and different fungi have different fruiting rates, that may be as long as once in thirty years. The results given here are based on sightings from a single visit, this may only capture 20% of the fungi present.

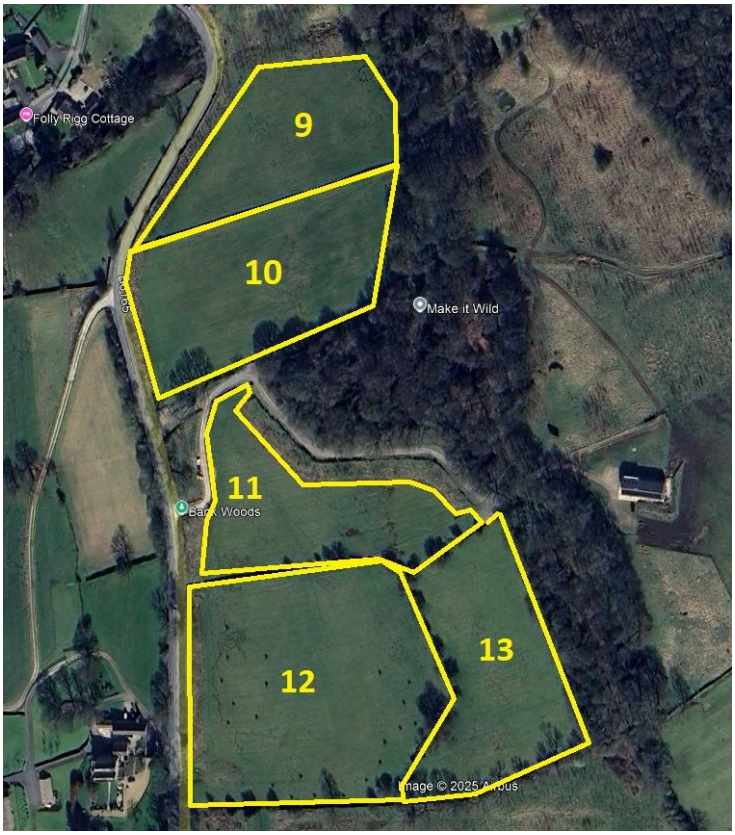
Ground conditions affect the success of the survey, areas which have had no recent management of grazing or cutting will show fewer fruiting bodies. Fields with high stocking numbers will experience a lot of compaction and crush damage to the fungi.

The weather and climate also impact, if it is hot and dry or very cold, fruiting bodies die, and fruiting is halted. In 2025 there was a long dry summer which led to a very late fruiting season and this resulted in many early fruiting species not appearing. Based on my surveys this season, of new and known sites, it is clear that this was the worst year this decade. Sites which are normally diverse showed good abundance of more common species but very few of the rarer/more threatened species. The results of this survey must take that into consideration. It is expected that the species diversity at this site is higher than suggested here.

A map showing parcels on the upper part of the land holding.

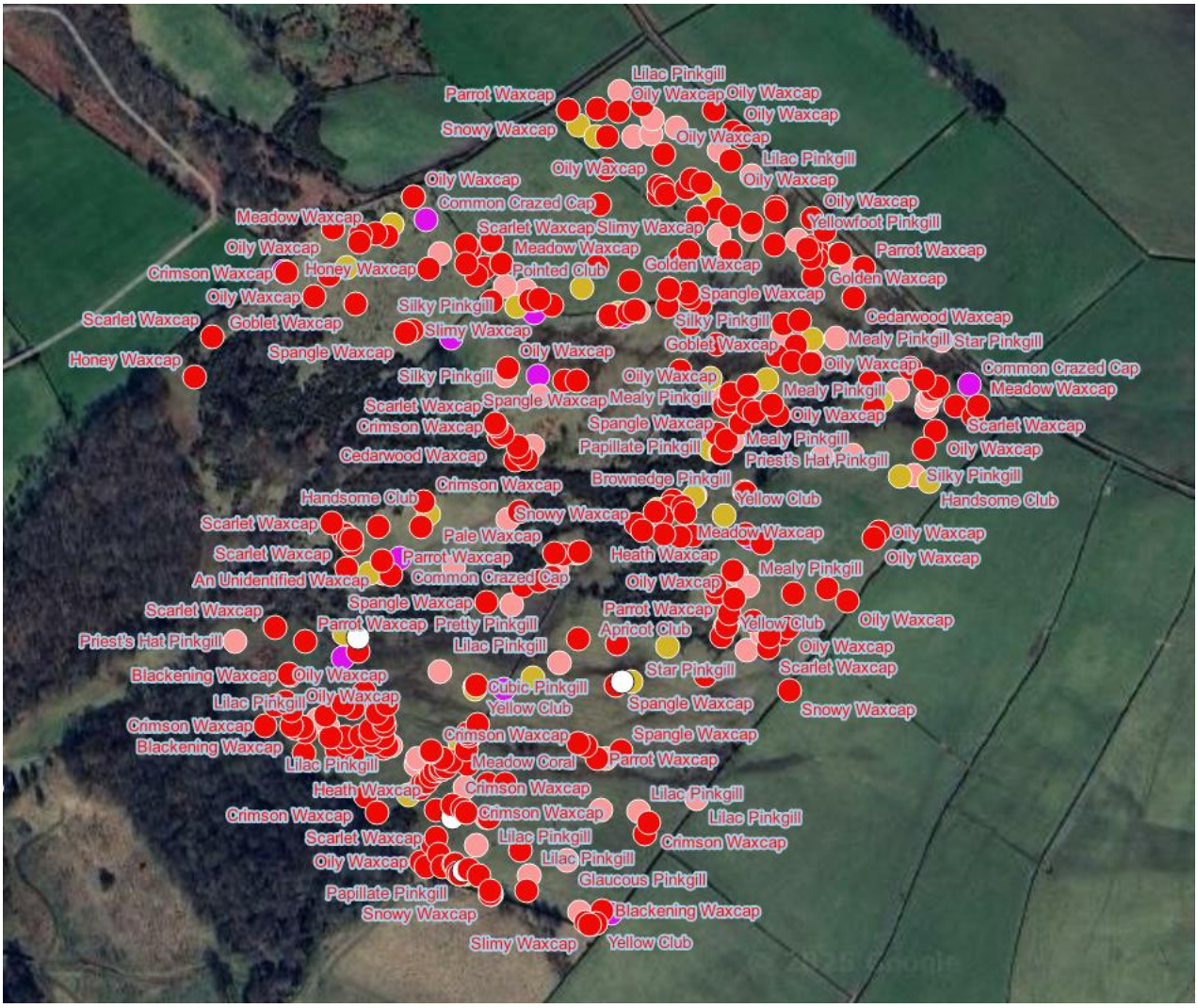


And the lower part



Results

The upper section



Much of this area has a high density and diversity of CHEGD species.

Field 1

Mainly open pasture.

The CHEGD score for the field is C3 H15 E5 G0 D1

In total 6 VU species were recorded,
Crimson Waxcap (*Hygrocybe punicea*)
Oily Waxcap (*Hygrocybe quieta*)
Pink Waxcap (*Porpolomopsis calyptriformis*)
Papillate Waxcap (*Hygrocybe subpapillata*)
Lilac Pinkgill (*Entoloma porphyrophaeum*)
Mealy Pinkgill (*Entoloma prunuloides*)

The presence of 15 species in the H category exceeds the threshold for Local Wildlife Site (LWS) designation.

Dermoloma cuneifolium is considered a High-Density Indicator, only found on sites with good diversity. Papillate Waxcap is a very rare waxcap with very few records in the UK. It was recorded several times in this section but because it is so rare the specimens will need to go for sequencing to confirm the ID.

Field 2

Open pasture

The CHEGD score for the field is C3 H13 E7 G0 D1

In total 4 VU species were recorded,
Crimson Waxcap (*Hygrocybe punicea*)
Oily Waxcap (*Hygrocybe quieta*)
Lilac Pinkgill (*Entoloma porphyrophaeum*)
Mealy Pinkgill (*Entoloma prunuloides*)

The presence of 4 species within the C category meets the threshold for LWS designation.
The presence of 13 species within the H category exceeds the threshold for LWS designation.

Field 3

Rough pasture with lots of Gorse.

The CHEGD score for the field is C3 H14 E6 G0 D1

In total 4 VU species were recorded,
Crimson Waxcap (*Hygrocybe punicea*)
Goblet Waxcap (*Hygrocybe lepida*)
Oily Waxcap (*Hygrocybe quieta*)
Mealy Pinkgill (*Entoloma prunuloides*)

The presence of 14 species within the H category exceeds the threshold for LWS designation.

Field 4

A very diverse area with open grassland, botanically rich areas, scrub and gorse.

The CHEGD score for the field is C4 H18 E7 G0 D1

In total 7 VU species were recorded,
Crimson Waxcap (*Hygrocybe punicea*)
Nitrous Waxcap *(Neohygrocybe nitrata*)
Papillate Waxcap (*Hygrocybe subpapillata*)
Yellowfoot Waxcap (*Cuphophyllus flavipes*)
Brightsky Pinkgill (*Entoloma madidum*)
Lilac Pinkgill (*Entoloma porphyrophaeum*)
Mealy Pinkgill (*Entoloma prunuloides*)

The presence of 4 species within the C category meets the threshold for LWS designation.
The presence of 18 species within the H category exceeds the threshold for LWS designation and if 17 or more H group species are recorded in one visit it is considered to be SSSI grade.
Also found on this field was Entoloma madidum, this is a recently named species having been separated from the Priority Species and IUCN Vulnerable Entoloma bloxamii. As such this can be considered to be both a Priority Species and Vulnerable to extinction.

Field 5

Rough grassland with gorse.

The CHEGD score for the field is C2 H12 E3 G0 D1

In total 3 VU species were recorded,
Crimson Waxcap (*Hygrocybe punicea*)
Oily Waxcap (*Hygrocybe quieta*)
Mealy Pinkgill (*Entoloma prunuloides*)

The presence of 12 species within the H category exceeds the threshold for LWS designation.

Field 6

Rough pasture, the lower section is mainly Gorse.

The CHEGD score for the field is C2 H14 E2 G0 D1

In total 3 VU species were recorded,
Crimson Waxcap (*Hygrocybe punicea*)
Goblet Waxcap (*Hygrocybe lepida*)
Oily Waxcap (*Hygrocybe quieta*)

The presence of 14 species within the H category exceeds the threshold for LWS designation.

Field 7

This appears to have been used as a meadow at some time. The distribution of the CHEGD species around the edge of the field suggests that something has been spread on the main body of the field that has degraded the fungal community.

The CHEGD score for the field is C1 H12 E2 G0 D0

In total 3 VU species were recorded,
Bitter Waxcap (*Hygrocybe mucronella*)
Crimson Waxcap (*Hygrocybe punicea*)
Oily Waxcap (*Hygrocybe quieta*)

Field 8

This also appears to have been a meadow but the CHEGD species are well spread across it.

The CHEGD score for the field is C3 H7 E2 G0 D1

In total 2 VU species were recorded,
Oily Waxcap (*Hygrocybe quieta*)
Lilac Pinkgill (*Entoloma porphyrophaeum*)

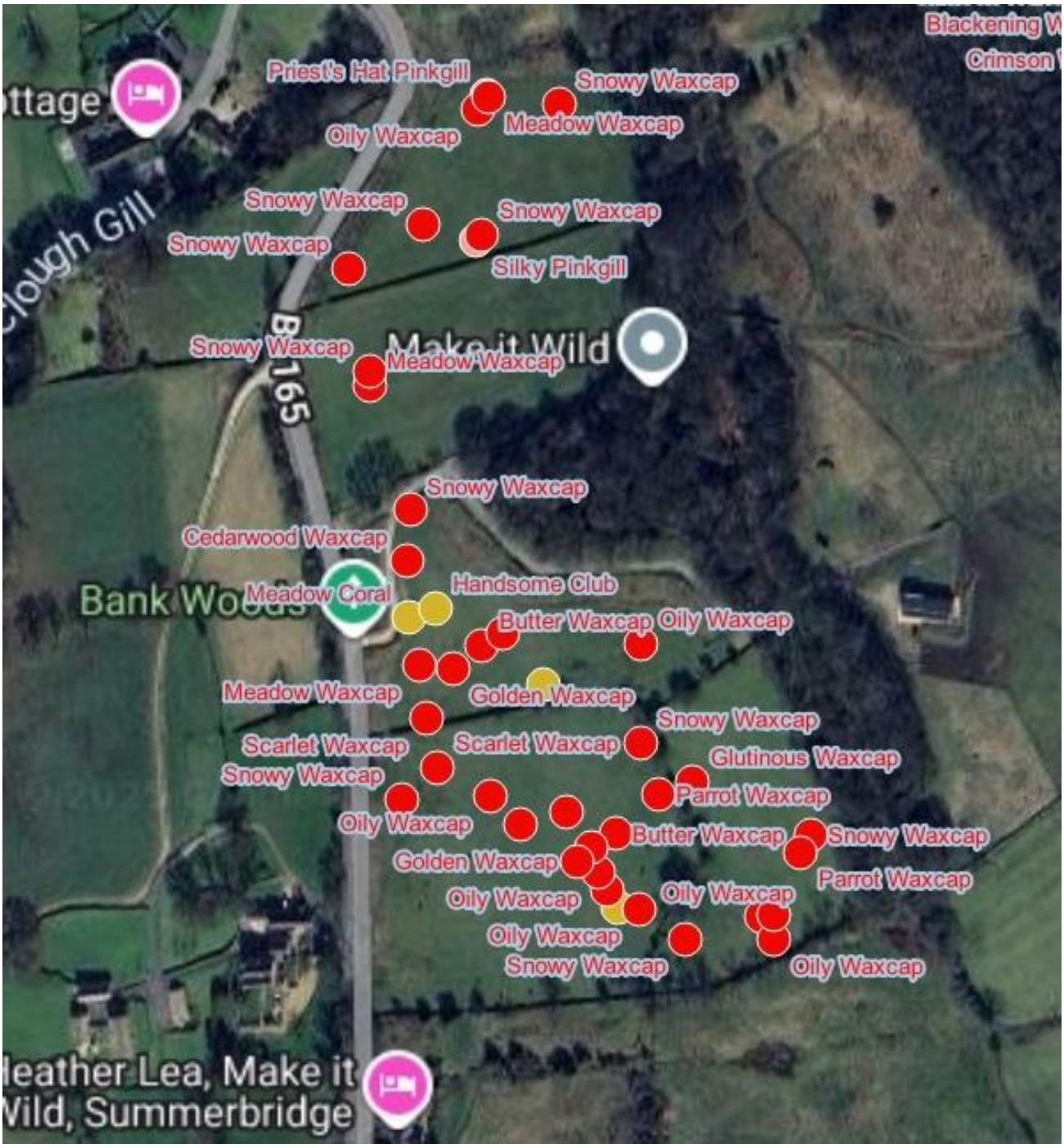
The top section

When considered as a whole this section is internationally important.

The CHEGD score for the area is C6 H25 E13 G0 D1

The presence of 6 species in the C category exceeds the threshold for LWS designation and almost meets the SSSI threshold.
The presence of 25 species in the H category exceeds the threshold for SSSI designation.

The lower section



Field 9

A meadow. The grass was quite long which makes fungi less likely to fruit and more difficult to find. The field has been improved. Species were found around the outside of the field.

The CHEGD score for the field is C0 H3 E2 G0 D0

In total 1 VU species was recorded,
Oily Waxcap (*Hygrocybe quieta*)

Field 10
A meadow. There was not much present here. Just two Waxcaps. No Vulnerable species were recorded.

Field 11
Steep pasture.

The CHEGD score for the field is C2 H7 E0 G0 D0

In total 1 VU species was recorded,
Oily Waxcap (*Hygrocybe quieta*)

Field 12
Steep pasture.

The CHEGD score for the field is C1 H8 E0 G0 D0

In total 1 VU species was recorded,
Oily Waxcap (*Hygrocybe quieta*)

Field 13
A flatter field borderd by mature trees.

The CHEGD score for the field is C0 H5 E0 G0 D0

In total 1 VU species was recorded,
Oily Waxcap (*Hygrocybe quieta*)

The lower fields
Taken together this section is much less diverse than the upper section.

The CHEGD score for the area is C2 H10 E2 G0 D0

Oily Waxcap is the only VU species recorded and it is present in all but Field 10.

Site Overall
All the species recorded in the lower section are also found in the upper section so the CHEGD score for the site is the same as for the upper section.
It is an internationally important site.

Conclusion
The pasture here is mycologically rich. It is likely that with further survey work it would meet SSSI criteria in C and E as well as H.

Management
Ideal conditions for Waxcap Grasslands are areas with high rainfall and good drainage, ensuring moist but not waterlogged soil. Soils are nutrient poor and both physically and chemically undisturbed. The fungi perform different functions within the ecosystem, but many have a symbiotic relationship with grasses and flowering plants which are found in nutrient poor conditions.

There are four major threats to diversity in Waxcap grasslands.

Physical disturbance – digging, ploughing, machinery, large groups of people, too many animals or heavy animals grazing when the ground is moist. This can completely eradicate the fungi.

Chemical change – any agro-chemicals, fertiliser, lime, fungicides etc but also the impact of dung or manure. It is the low nutrient levels which generate the great diversity in these grasslands, the plants and fungi must work together to maximise efficient collection and sharing of limited resources. As soon as there is an influx of nutrients the role of certain species becomes redundant and they are lost from the community, other less selective species begin to thrive, and yet more species are lost.

Spread of rank species - Following on from the above, the species make-up can be upset by the addition of nutrients, but also by changes in light levels (through nearby tree/hedgerow growth) and increased soil water levels with poor drainage, leading to Soft Rush encroachment for example.
If grazing levels fall too low, broad-leaved grasses and woody species start to develop.
In best practice, manure should not be applied to pasture and only lightly to meadows.

Competition – CHEGD fungi are restricted to grasslands which are low nutrient. If trees are present with mycorrhizal fungi, these will outcompete the CHEGD fungi as their capacity for accessing nutrients is much greater. This leads to a buffer zone around trees reaching as far as its roots, roughly equivalent to the height of the tree.

Recommendations

The upper part of the site is currently grazed extensively with Belted Galloways. This management is ideal both for the fungi and botanical diversity. It may be necessary to do some work to prevent the grassland slowly being taken over by gorse encroachment.
Were meadows are still worked it would be best not to add extra nutrients, relying on the presence of nitrogen fixing species and fungal networks to provide nutrients. Aftermath grazing will help the fungi to fruit and to enhance wild flower development.

Scoring and Assessment

To get a good picture of the value of a site it should be surveyed over a period of years. Ideally a site would be surveyed three times between late Summer and Early Winter, for at least three consecutive years. Criteria for assessment as a SSSI or LWS are usually based on cumulative data.

Several scoring systems have been developed to rate the importance of Waxcap Grasslands. Ratings can be given based on a single survey but are better based on several visits.

Assessment and designation are made by achieving a threshold set for each group. Below are thresholds based on single surveys and multiple visits.

The site classification system of Nitare (1988) (Single visit)

Conservation Category	Clavariaceae	Hygrocybe	Entoloma	Geoglossaceae	Dermoloma
Nationally important	6+	11+	9+	4+	2+
Regionally important	4+	7+	6+	3+	1+

Criteria based on multiple visits

Conservation Category	Clavariaceae	Hygrocybe	Entoloma	Geoglossaceae	Dermoloma
SSSI	7	19	15	5	3
LWS	4	10	8	3	2

A site may meet the threshold in any one of the CHEGD categories, but the best sites will have good diversity across them. A score of 45 is nationally important.

Species List

Common Name	Taxon	1	2	3	4	5	6	7	8	Top	9	10	11	12	13	Bottom	Site
C																	
Apricot Club	*Clavulinopsis luteoalba*	Y	Y	Y	Y				Y	Y							Y
Handsome Club	*Clavulinopsis laeticolor*		Y	Y	Y	Y			Y	Y			Y			Y	Y
Ivory Coral	*Ramariopsis robusta*						Y			Y							Y
Meadow Coral	*Clavulinopsis corniculata*	Y	Y			Y	Y		Y	Y			Y	Y		Y	Y
Pointed Club	*Clavaria falcata*				Y			Y		Y							Y
Yellow Club	*Clavulinopsis helvola*	Y	Y	Y	Y					Y							Y
Total		**3**	**4**	**3**	**4**	**2**	**2**	**1**	**3**	**6**	**0**	**0**	**2**	**1**	**0**	**2**	**6**
H																	
Bitter Waxcap	*Hygrocybe mucronella*							Y		Y							Y
Blackening Waxcap	*Hygrocybe conica*	Y	Y	Y	Y					Y							Y
Butter Waxcap	*Hygrocybe ceracea*	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y	Y	Y
Cedarwood Waxcap	*Cuphophyllus russocoriacaeus*	Y		Y		Y		Y		Y			Y			Y	Y
Crimson Waxcap	*Hygrocybe punicea*	Y	Y	Y	Y	Y	Y	Y		Y							Y
Earthy Waxcap	*Cuphophyllus fornicatus*				Y					Y							Y
Garajonayensis	*Hygrocybe garajonayensis*		Y							Y							Y
Garlic Waxcap	*Hygrocybe helobia*				Y					Y							Y
Glutinous Waxcap	*Hygrocybe glutinipes*		Y							Y					Y	Y	Y
Goblet Waxcap	*Hygrocybe lepida*			Y			Y			Y							Y
Golden Waxcap	*Hygrocybe chlorophana*	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y		Y	Y
Grey Gilled Waxcap	*Hygrocybe cinereifolia*		Y				Y	Y		Y							Y
Heath Waxcap	*Gliophorus laetus*			Y	Y	Y	Y			Y							Y
Honey Waxcap	*Hygrocybe reidii*	Y	Y	Y	Y	Y	Y			Y							Y
Meadow Waxcap	*Cuphophyllus pratensis*	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y		Y	Y
Nitrous Waxcap	*Neohygrocybe nitrata*				Y					Y							Y
Oily Waxcap	*Hygrocybe quieta*	Y	Y	Y		Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y
Pale Waxcap	*Cuphophyllus berkeleyi*				Y					Y							Y
Papillate Waxcap	*Hygrocybe subpapillata*	Y			Y					Y							Y
Parrot Waxcap	*Gliophorus psittacinus*	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y
Pink Waxcap	*Porpolomopsis calyptriformis*	Y								Y							Y
Scarlet Waxcap	*Hygrocybe coccinea*	Y	Y	Y	Y	Y	Y	Y		Y			Y	Y		Y	Y
Slimy Waxcap	*Gliophorus irrigatus*	Y	Y		Y		Y	Y	Y	Y				Y		Y	Y
Snowy Waxcap	*Cuphophyllus virgineus*	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Spangle Waxcap	*Hygrocybe insipida*	Y		Y	Y	Y	Y		Y	Y							Y
Yellow Foot Waxcap	*Cuphophyllus flavipes*				Y												Y
Total		**15**	**13**	**14**	**18**	**12**	**14**	**12**	**7**	**25**	**3**	**2**	**7**	**8**	**5**	**10**	**25**
E																	
Brightsky Pinkgill	*Entoloma madidum*				Y					Y							Y
Brownedge Pinkgill	*Entoloma xanthocroum*			Y						Y							Y
Cream Pinkgill	*Entoloma sericellum*						Y			Y							Y
Cubic Pinkgill	*Entoloma rhombisporum*				Y					Y							Y
Glaucous Pinkgill	*Entoloma exile*	Y								Y							Y
Lilac Pinkgill	*Entoloma porphyrophaeum*	Y	Y		Y				Y	Y							Y
Mealy Pinkgill	*Entoloma prunuloides*	Y	Y	Y	Y	Y				Y							Y
Papillate Pinkgill	*Entoloma clandestinum*		Y	Y	Y					Y							Y
Pretty Pinkgill	*Entoloma formosum*				Y					Y							Y
Priest's Hat Pinkgill	*Entoloma infula*		Y	Y	Y	Y	Y		Y	Y	Y					Y	Y
Silky Pinkgill	*Entoloma sericeum*	Y	Y	Y		Y		Y		Y	Y					Y	Y
Star Pinkgill	*Entoloma conferendum*		Y							Y							Y
Yellowfoot Pinkgill	*Entoloma turbida*	Y	Y	Y				Y		Y							Y
Total		**5**	**7**	**6**	**7**	**3**	**2**	**2**	**2**	**13**	**2**	**0**	**0**	**0**	**0**	**2**	**13**
D																	
Common Crazed Cap	*Dermoloma cuneifolium*	Y	Y	Y	Y	Y	Y			1							Y
Total		**1**	**1**	**1**	**1**	**1**	**1**	**0**	**0**	**Y**	**0**	**0**	**0**	**0**	**0**	**0**	**1**
CHEGD Total		**24**	**25**	**24**	**30**	**18**	**19**	**15**	**12**	**45**	**5**	**2**	**9**	**9**	**5**	**14**	**45**
IUCN		**6**	**4**	**4**	**7**	**3**	**3**	**3**	**2**	**11**	**1**	**0**	**1**	**1**	**1**	**1**	**11**

Species in red are on the IUCN global Red List.

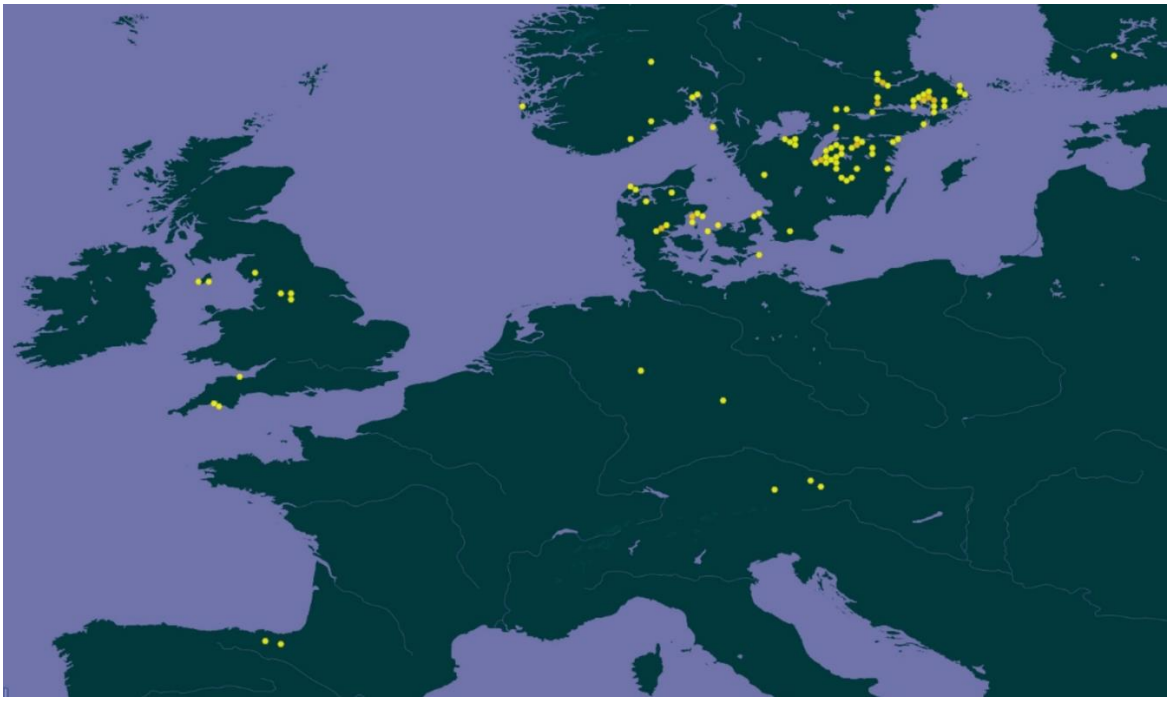
Totals in purple and yellow meet Local Wildlife Site criteria. Totals in red and yellow meet SSSI criteria.

Distribution Maps

This section takes a closer look at some of the species recorded and shows global distribution maps. These maps show all historic records. Species assessed as Vulnerable or Near Threatened are known to be losing habitat and so the maps will show historical records which have since been lost.

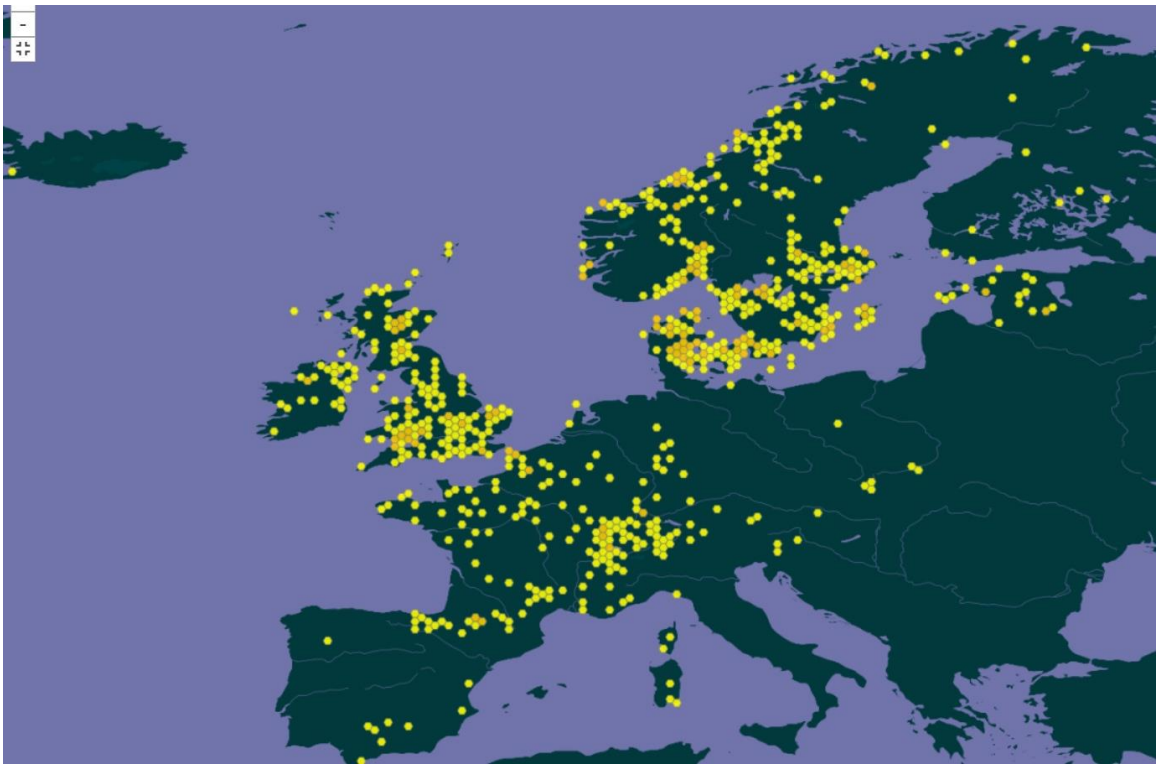
Ivory Coral (*Ramariopsis robusta*)

Map showing global records



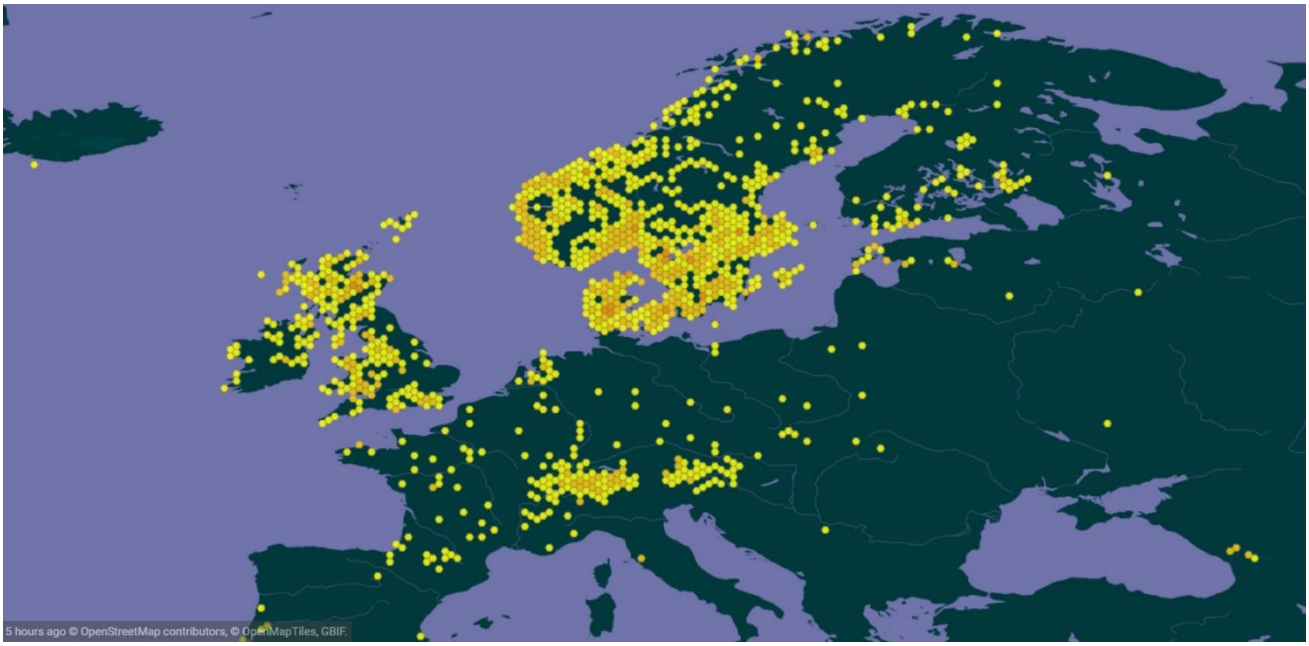
Bitter Waxcap (*Hygrocybe mucronella*) - Vulnerable

Map showing global records.



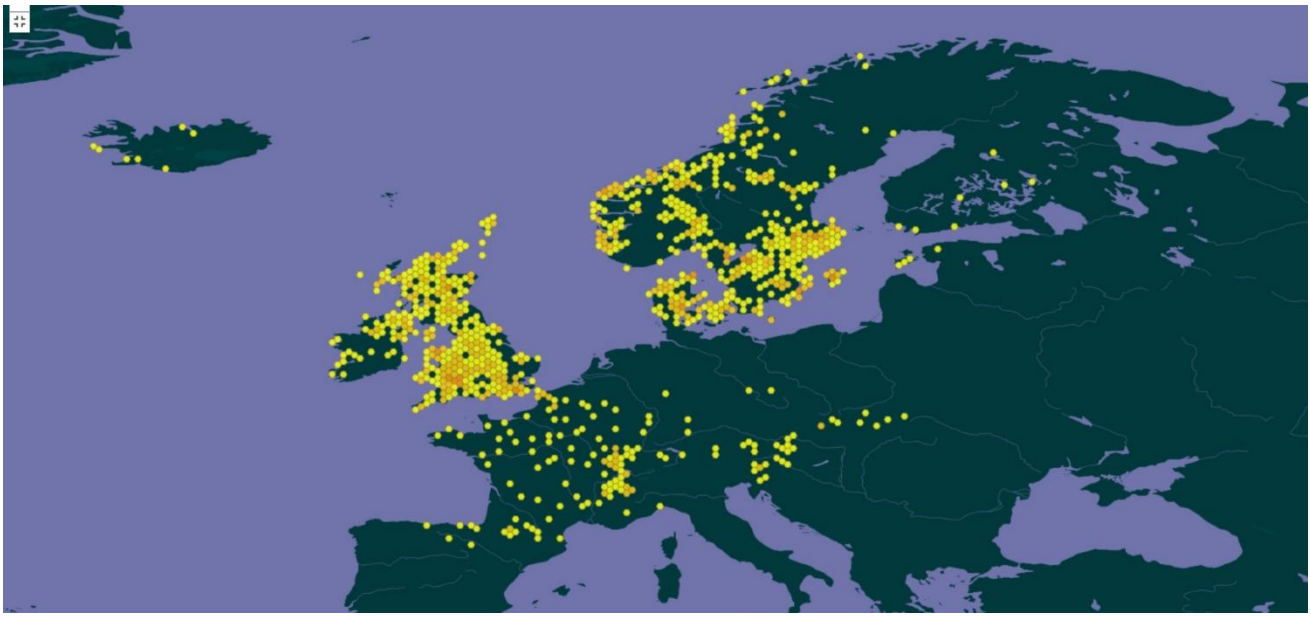
Goblet Waxcap (*Hygrocybe lepida*) – Vulnerable

Map showing global records.



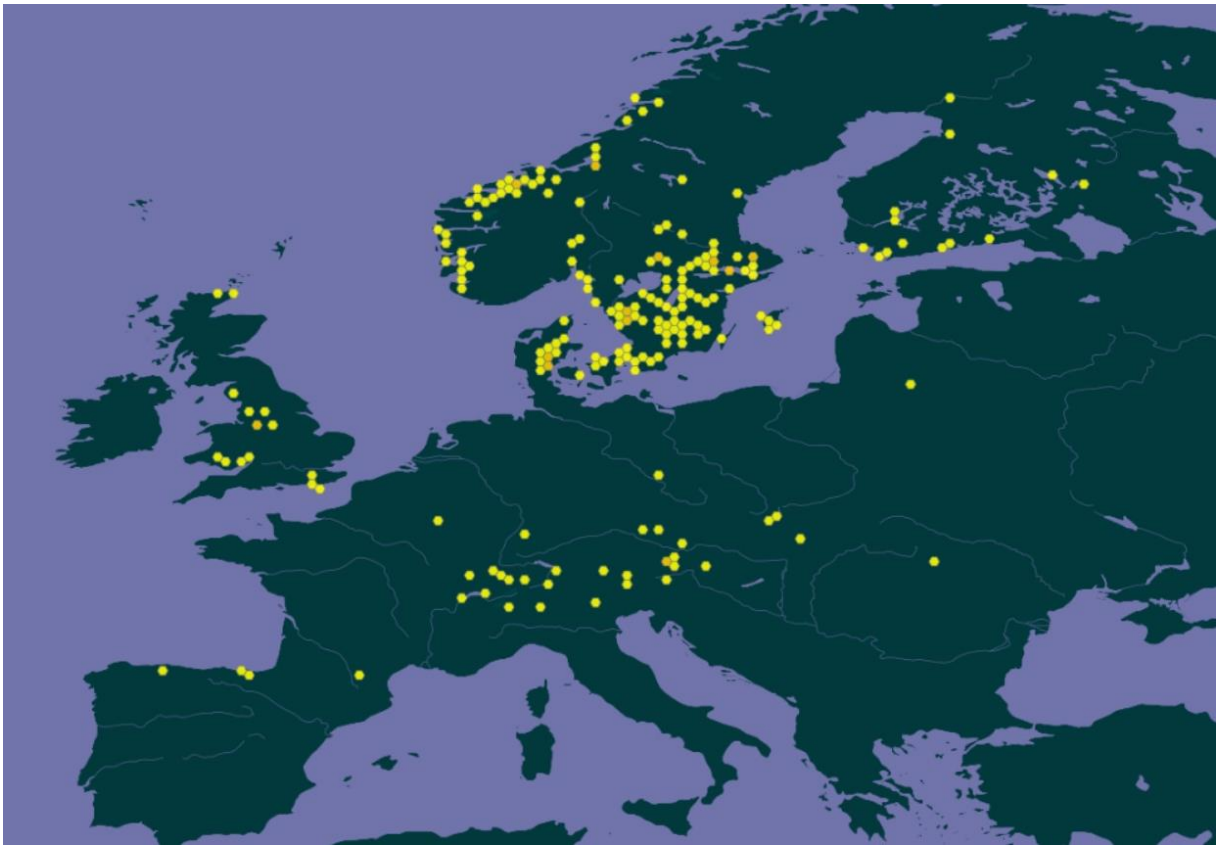
Oily Waxcap (*Hygrocybe quieta*) - Vulnerable

Map showing global records.



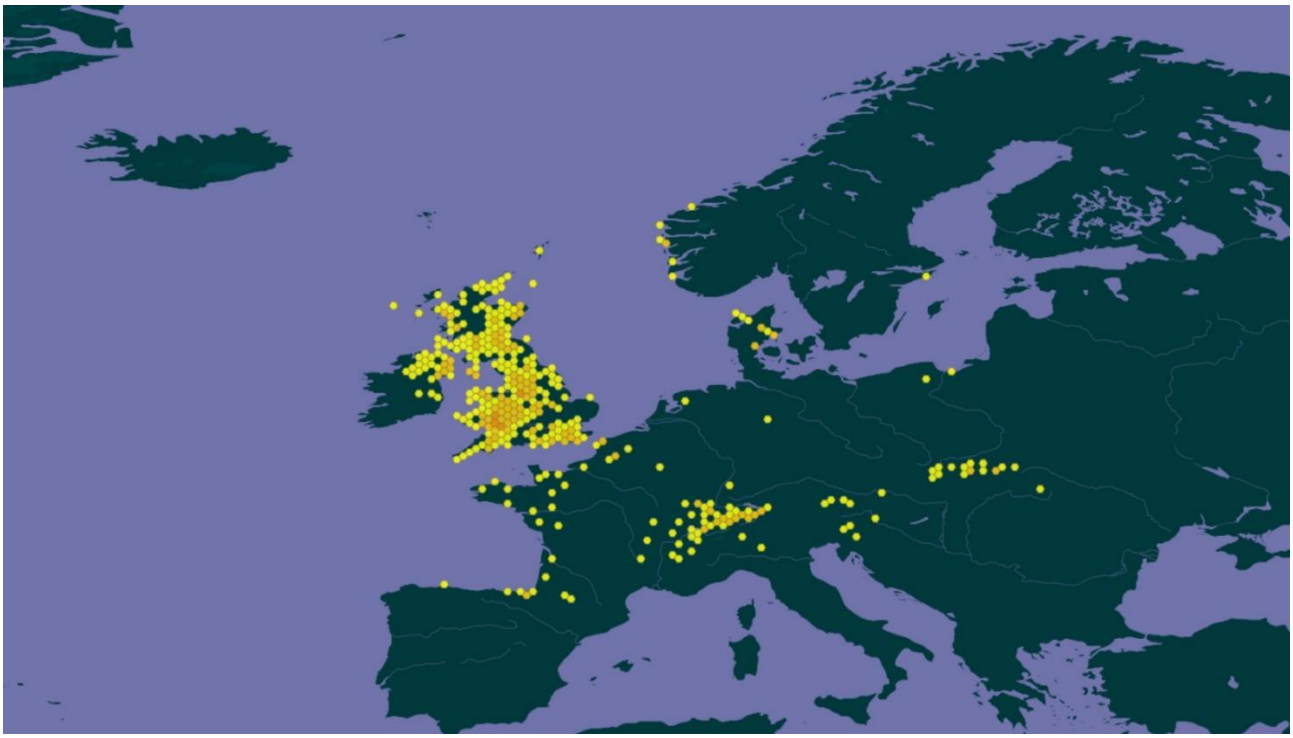
Papillate Waxcap (*Hygrocybe subpapillata*) – Vulnerable

Map showing global records



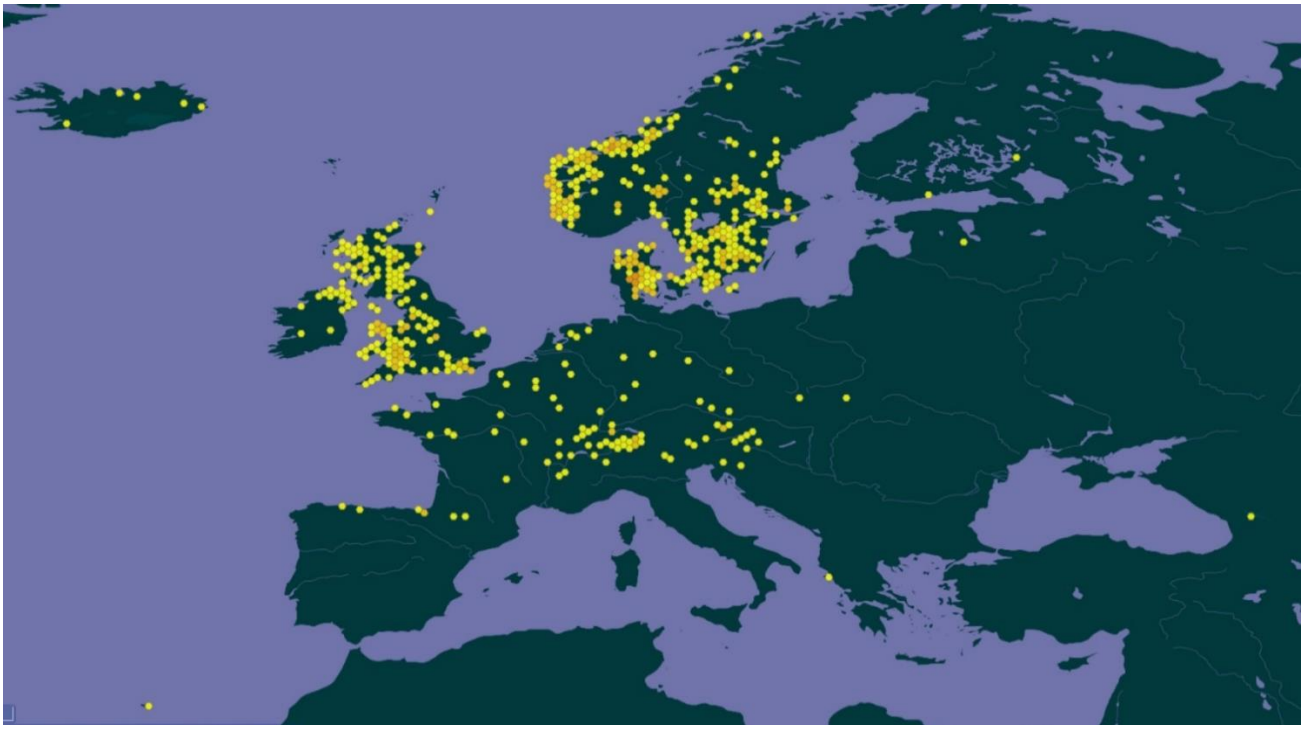
Pink Waxcap (*Porpolomopsis calyptriformis*) - Vulnerable

Map showing global records.



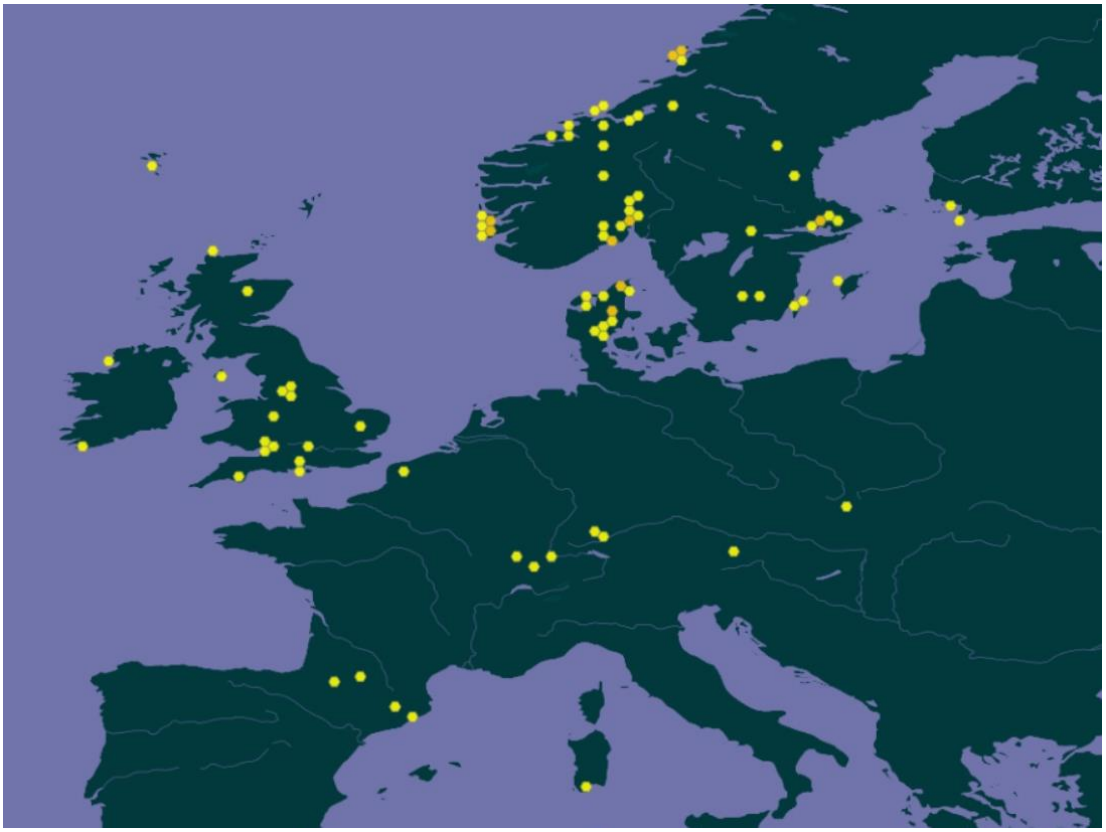
Yellowfoot Waxcap (*Cuphophyllus flavipes*) – Vulnerable

Map showing global records.



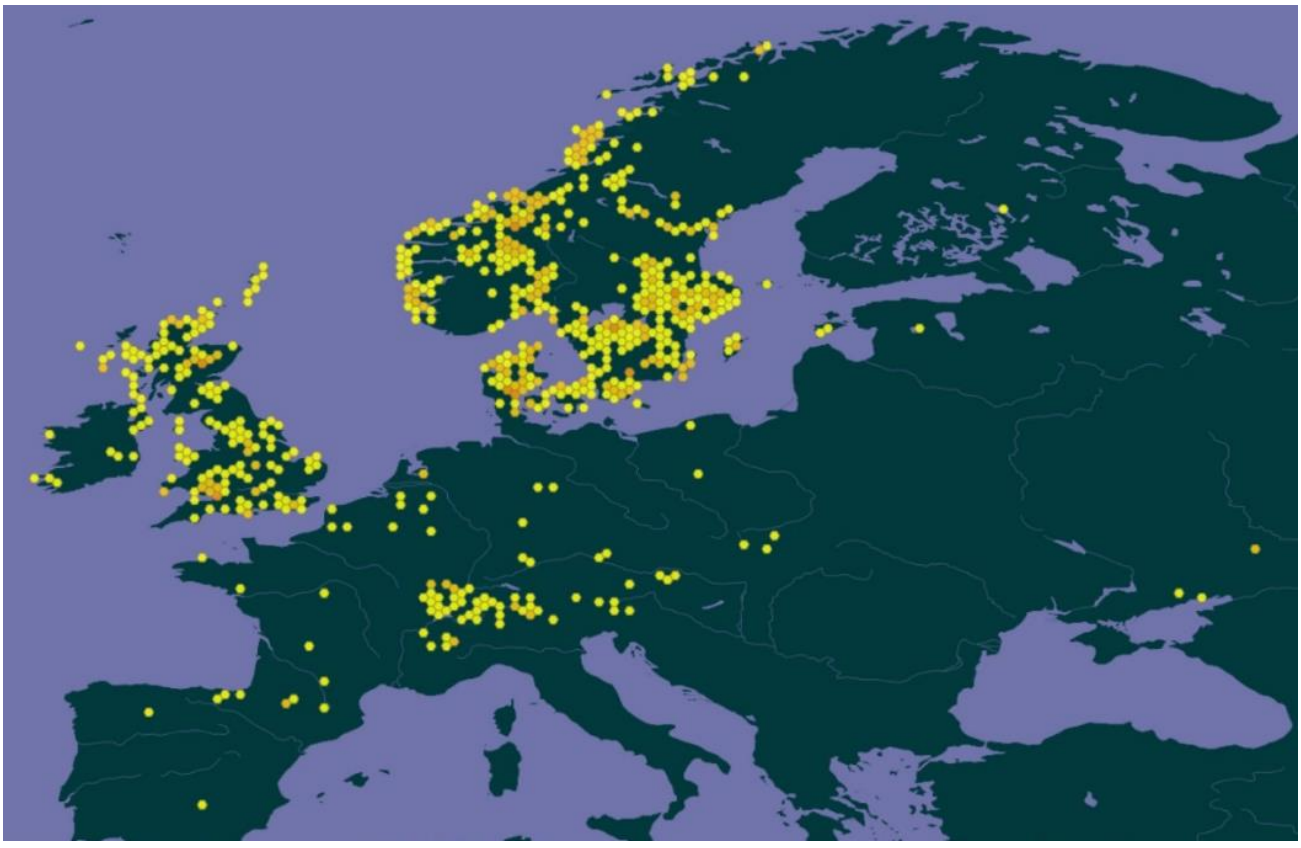
Brightsky Pinkgill (Entoloma (*Entoloma atromadidum*) – IUCN Vulnerable – Priority Species

Map showing global records



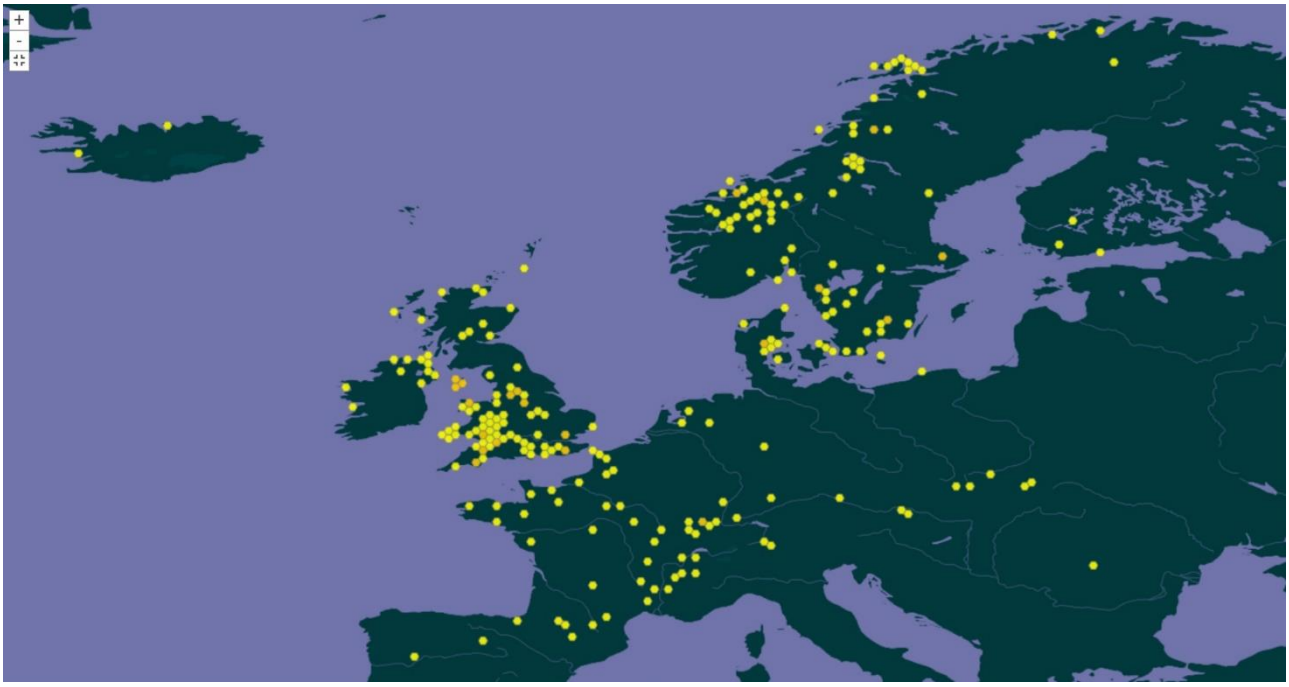
Mealy Pinkgill (*Entoloma prunuloides*) - Vulnerable

Map showing global records.

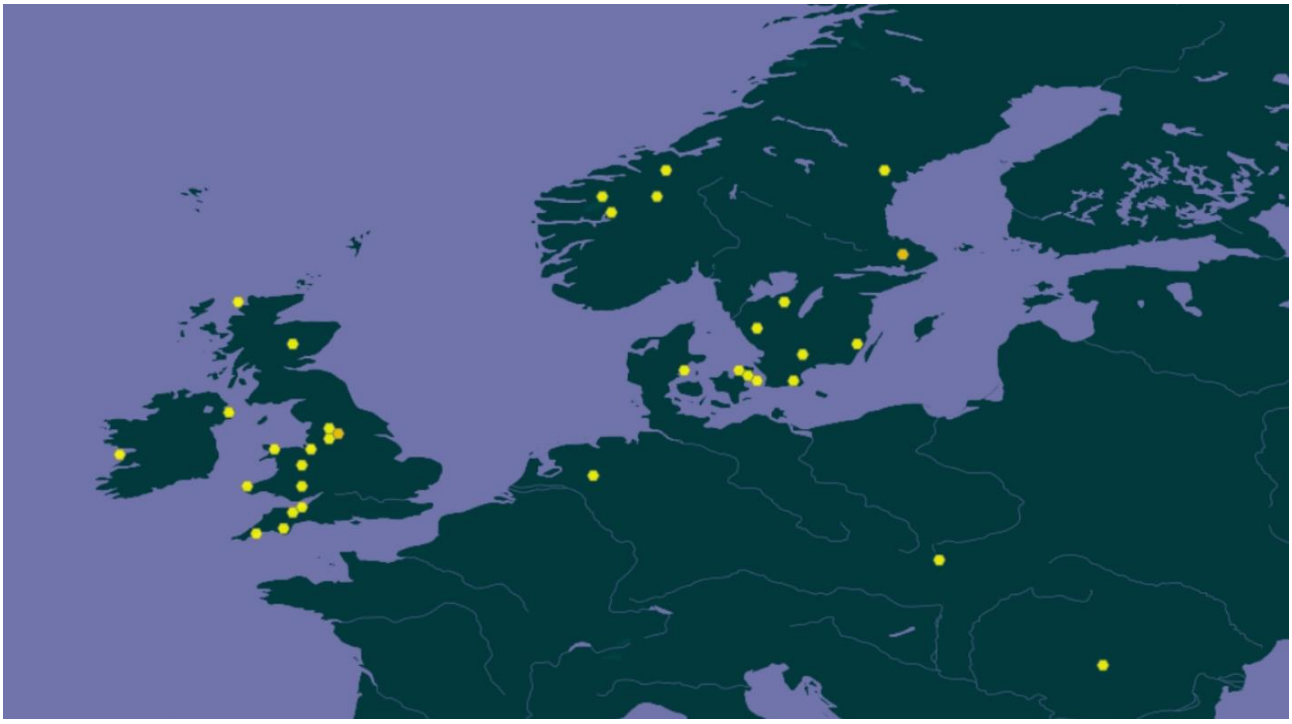


Lilac Pinkgill (*Entoloma porphyrophaeum*) - Vulnerable

Map showing global records.



The next map shows the records for Lilac Pinkgill recorded in the years 2020/21/22
Here you can see that the number of global records is far fewer and over a much smaller range. Much of the habitat has been lost.



What is clear from these distribution maps is that the CHEGD species shown are restricted to a relatively small area of the world with a focus on the countries with an Atlantic influence, mountainous areas and areas with annual snow cover. The UK stands out as a stronghold.
The habitat is rapidly declining across Europe, due to many pressures including improvement of grasslands, expanding urbanisation and conservation projects like tree planting, meadow creation and rewilding. Many of the artic/alpine areas are dependent on annual snow cover to maintain the habitat and this is reducing due to global warming. The UK has retained many of these grasslands and for now the Atlantic influence continues and the habitat is in relatively good condition. As time goes on, our populations will become increasingly important as a global reservoir. It's important that we understand the value of our grasslands and make efforts to protect them.

It's worth having context to understand the importance of the IUCN Vulnerable species. Species at risk are rated as Vulnerable, Endangered or Critically Endangered. There are many species on the UK Red List but few of these face a global extinction threat.

Other species assessed as globally Vulnerable include Snow Leopard, Hippopotamus, Giant Panda and Polar Bear.

The common factor between all these species is human pressure on established habitats which destroy ecological niches that have taken centuries to establish.